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United States Patent [19]

Polson et al.

[11] **Patent Number:** **5,660,849**[45] **Date of Patent:** **Aug. 26, 1997****[54] APPARATUS FOR FORMING A
BIODEGRADABLE IMPLANT PRECURSOR**

[75] Inventors: **Alan M. Polson; Deryl D. Swanbom;
Richard L. Dunn; Charles P. Cox;
Richard L. Norton; Bryan K. Lowe;
Kenneth S. Peterson**, all of Fort
Collins, Colo.

[73] Assignee: **Atrix Laboratories, Inc.**, Fort Collins,
Colo.

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[51] **Int. Cl.⁶** **A61F 2/00**

[52] **U.S. Cl.** **424/426; 424/422; 424/423;
424/428**

[58] **Field of Search** **424/422, 423,
424/426, 428**

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Primary Examiner—Thurman K. Page

Assistant Examiner—James M. Spear

Attorney, Agent, or Firm—Merchant, Gould, Smith, Edell, Welter & Schmidt

[57] ABSTRACT

The invention is directed to a biodegradable implant precursor having a two-part structure made of an outer sac and a liquid content. The implant precursor is composed of a biodegradable, water-coagulable thermoplastic polymer and a water-miscible organic solvent. When administered to an implant site in an animal, the implant precursor will solidify in situ to a solid, microporous matrix by dissipation of the organic solvent to surrounding tissue fluids and coagulation of the polymer. The invention also includes methods of making the implant precursor, an apparatus for forming the precursor, and a kit containing the apparatus. Also provided are methods of using the implant precursor for treating a tissue defect in an animal, for example, for enhancing cell growth and tissue regeneration, wound and organ repair, nerve regeneration, soft and hard tissue regeneration, and the like, for delivery of biologically-active substances to tissue or organs, and other like therapies.

13 Claims, 2 Drawing Sheets